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ABSTRACT

After the third semester of comparing college student performance in beginning courses in Century 21 shorthand and Gregg shorthand statistics failed to support the contention that Century 21 instruction produces a higher proportion of successes among students who speak a foreign language at home (Spanish). Results also indicated that the attrition rate and the overall performance in both classes was virtually the same. At the end of the third semester, Century 21 students could take dictation at higher speeds while Gregg students did significantly better on vocabulary word lists. Since the size of the original experimental group dropped to fifteen students (eight Century 21 students and seven Gregg students), no meaningful statistical comparisons could be made. Hence a larger group of students were included for a four-group design, and several qualifications were considered. (Results of the first, second, and final semester evaluations are available in separate documents.)
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An Evaluation of the Project:
PILOT COURSE IN CENTURY 21 SHORTHAND

Third Semester

February 1977

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Project Proposal #NMSU 76-0004

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OVERVIEW

CENTURY 21 vs. GREGG: THE FIRST THREE COLLEGE SEMESTERS

1. The statistics gathered in three semesters of college instruction fail to support the contention that Century 21 instruction produces a higher proportion of successes among students who speak a foreign language at home (Spanish) than does Gregg instruction. One Spanish speaking student has survived in Gregg after three semesters, while none have survived in Century 21. Two minority members have survived for three semesters in both Century and Gregg.

2. The attrition rate in Century 21 for three semesters of instruction is about the same as for Gregg.

3. The overall performance of Century 21 and Gregg students after three semesters is virtually the same. Century 21 students take dictation at slightly higher speeds than do Gregg students; while Gregg students do significantly better on vocabulary word lists (perhaps due to fewer speed forms to be learned).

Since the size of the original experimental groups is so small (Century has 8, Gregg has 7) no meaningful statistical comparisons could be made. Hence, a larger group of students, including 21 additional Gregg students (Gregg Group B = 7, Gregg Group C = 14) was included in the design. Statistical differences between four groups with a total sample size of 36 could be detected, and if detected the contribution to these differences by the two experimental groups (Gregg A and Century 21) could then be pointed out.

Other qualifications in the design of this experimental project are as follows:

1. An experienced Gregg instructor was teaching the Gregg section, while the Century 21 students were taught by an instructor with very little experience with Century 21 and no experience in teaching it (although many years' experience in Gregg instruction).

2. The Gregg students were working with well-tested and often-revised textbooks and materials, while the Century 21 students were working with entirely new textbooks.

3. The vocabulary of the Century 21 materials is much more difficult than the Gregg materials. The words are more complex and more specialized in Century 21.

4. The texts in Century 21 are organized for instruction over a 3-semester sequence, while those for Gregg are organized for a 4-semester sequence. There are 200 speed forms that must be learned in Century 21, while only 133 brief forms must be learned in Gregg. Century 21 has an enriched vocabulary, while Gregg deals with a regular vocabulary. The net effect is that more material must be learned in a given period of time by Century 21 students than by Gregg students.

5. The organization of the materials in Century 21 is different from the organization of materials in the Gregg textbooks. In addition, the structure of the shorthand strokes is different for the two: in Century 21 all strokes go in the same direction, while in Gregg they do not.

HOLDING POWER

The proportions of successful students in Century 21 and Gregg during the third semester were as follows (success = C- or better at end of term):

<u>GREGG A</u>	<u>GREGG B</u>	<u>GREGG C</u>	<u>CENTURY</u>
4/8 = 50.0%	5/7 = 71.4%	10/14 = 71.4%	5/7 = 71.4%

(Gregg A is the group of Gregg students taking three semesters of College Gregg.

Gregg B is the group of Gregg students joining the Gregg A students in the second semester and continuing into the third semester.

Gregg C is the group of Gregg students joining the Gregg A and B students in the third semester.)

The proportion of successful students for three semesters is as follows:

<u>SEMESTER</u>	<u>GREGG A</u>	<u>GREGG B</u>	<u>GREGG C</u>	<u>CENTURY</u>
THIS	4/8 = 50.0%	5/7 = 71.4%	10/14 = 71.4%	5/7 = 71.4%
TWO	6/26 = 23.1%	5/12 = 41.7%	--	8/35 = 22.9%
THREE	4/26 = 15.4%	--	--	5/35 = 14.3%

The proportion of successful students among minorities is:

<u>SEMESTER</u>	<u>GREGG A</u>	<u>GREGG B</u>	<u>GREGG C</u>	<u>CENTURY</u>
THIS	2/4 = 50.0%	1/2 = 50.0%	3/5 = 60.0%	2/3 = 66.7%
TWO	3/14 = 21.4%	1/3 = 33.3%	--	4/16 = 25.0%
THREE	2/14 = 14.3%	--	--	2/16 = 12.5%

The proportion of successful students among those who speak a foreign language at home is:

<u>SEMESTER</u>	<u>GREGG A</u>	<u>GREGG B</u>	<u>GREGG C</u>	<u>CENTURY</u>
THIS	1/3 = 33.3%	1/2 = 50.0%	2/4 = 50.0%	0/1 = 0.0%
TWO	2/13 = 15.4%	1/3 = 33.3%	--	2/13 = 15.4%
THREE	1/13 = 7.7%	--	--	0/13 = 0.0%

In comparison, the proportion of English only students (which includes some Spanish-Americans as well as other minorities) who were successful is:

<u>SEMESTER</u>	<u>GREGG A</u>	<u>GREGG B</u>	<u>GREGG C</u>	<u>CENTURY</u>
THIS	3/8 = 37.5%	4/5 = 80.0%	8/10 = 80.0%	5/6 = 83.3%
TWO	4/13 = 30.8%	4/9 = 44.4%	--	6/22 = 27.2%
THREE	3/13 = 23.1%	--	--	5/22 = 22.7%

TABLE I

NUMBER OF STUDENTS ATTAINING DICTATION SPEEDS (95% Accuracy) ON ONE OR MORE TESTS								
Speed (wpm)	GREGG A		GREGG B		GREGG C		CENTURY	
	N	%	N	%	N	%	N	%
60	(2)*	25.0	(1)*	14.3	(2)*	25.0	(1)*	14.3
70								
80	(2)	25.0	(1)	14.3	(2)	25.0		
90							(1)	14.3
100	1	12.5	2	28.5	1	12.5	1	14.3
110	2	25.0	2	28.6	2	25.0	3	42.8
120	1	12.5	1	14.3	1	12.5	1	14.3
Totals	8	100.0	7	100.0	8	100.0	7	100.0

*Number in parentheses indicates the number of students achieving that speed of dictation in the previous semester even though unable to achieve 90 or more in the present semester.

ANALYSIS OF VARIANCE

There are now four groups of students: Gregg A, B, C, and Century. The Gregg A, B, C students were in the experimental groups for three, two, or one semester, respectively; the Century group for three semesters. Two-way analyses of variance were performed, dividing the groups into:

Minority Students or not

High and low achievement on ACT tests:

English ACT (low = 1 - 17, high = 18+)

Math ACT (low = 1 - 12, high = 13+)

Overall ACT (low = 1 - 13, high = 14+)

These cut points are similar to cut points used in the previous two reports in this series. The chosen cut point values assured a minimum of three students in each cell (with an average of around four) for the two-way analyses of variance performed (four groups against either two categories of ACT or two categories of ethnicity: Minority or not).

The performance measures used as dependent variables in these analyses were:

Dictation Speed (average of four highest speeds attained successfully). If no speed tests passed successfully, the highest speed achieved last semester was assigned.

Performance on Word Tests (average of three tests expressed as percentage).

Homework Grade (letter grade expressed numerically where A = 11, A- = 10, ... D = 2, D- = 1).

Overall Grade (letter grade expressed numerically where A = 11, ... D = 2, D- = 1).

In addition to the analyses of variance utilizing the performance variables described above, an additional set of analyses (2 x 4) was made in which the students were classified as:

Minority or Anglo

Members of 4 Shorthand Groups

and the performance variables were the five ACT test results: English, Mathematics, Social Studies, Science, and Overall.

The results of the 21 analyses (16 analyses using shorthand performance as dependent variables, and five analyses using ACT attainment as dependent variables) are listed below:

1. Gregg students outperform Century 21 students on Vocabulary Tests when Overall ACT is used as one of the ANCOVA independent variables. No difference is evident when English ACT or Math ACT or when Minority vs. Anglo is used as an independent variable. The largest difference is between the surviving Gregg students from beginning of the experiment and the Century 21 students.
2. Students with high ACT English scores make better grades overall than students with low ACT English scores. No other differences between groups (three Gregg groups and Century 21) than the vocabulary measure mentioned above are evident.
3. Students with high ACT Math scores make better overall grades than students with low ACT Math scores. No other differences involving Math ACT and performance are detectable.
4. Anglos always significantly outperform minorities on the ACT sub-tests (English, Mathematics, Social Studies, Science, Overall).
5. There are no significant differences between any of the groups (Gregg groups or Century) when speed of dictation, Homework Grades, or overall grades are used as variables.

A typical ANOVA table for this experiment looks like this:

TABLE II

ANOVA: MEASURE = Vocabulary Tests

SOURCE OF VARIANCE	DF	MEAN SQUARES	F-Ratio	SIGNIFICANCE LEVEL
ACT Overall (High, Low)	1	633.00	4.07	n.s.
GROUPS (Cent., Gr-C, Gr-B, Gr-A)	3	546.54	3.51	$p < .05$
INTERACTION (ACT x Groups)	3	530.99	3.41	$p < .05$
WITHIN CELL	28	155.71		

All other ANOVA tables are similar to the above, however most of the results are non-significant.

CONCLUSIONS

Century 21 students have slightly higher dictation speeds than Gregg A students, are virtually identical to Gregg B students, and are slightly lower than Gregg C students (Century = 96.4 wpm, Gregg A = 88.8, Gregg B = 96.1, Gregg C = 99.6). None of these differ at any statistically significant level, so they must be considered equal.

Hence, any differences detectable in the first two semesters of this study (with the exception of greater proficiency in Vocabulary Tests) between Century 21 students and Gregg students have been erased. This may be simply a result of attrition (only the best shorthand students progress to three semesters of shorthand, so we are comparing the best with the best), or because of the smaller sample size involved, no differences are detectable.